

## ABSTRACT

A method of manufacturing an oxide dispersion strengthened ferritic steel excellent in high-temperature creep strength having a coarse grain structure is provided. This method comprises mixing either element powders or alloy powders and a  $Y_2O_3$  powder, subjecting the mixed powder to mechanical alloying treatment, solidifying the resulting alloyed powder by hot extrusion, and subjecting the resulting extruded solidified material to final heat treatment involving heating to and holding at a temperature of not less than the  $Ac_3$  transformation point and slow cooling at a rate of not more than a ferrite-forming critical rate to thereby manufacture an oxide dispersion strengthened ferritic steel which comprises, as expressed by % by weight, 0.05 to 0.25% C, 8.0 to 12.0% Cr, 0.1 to 4.0% W, 0.1 to 1.0% Ti, 0.1 to 0.5%  $Y_2O_3$  with the balance being Fe and unavoidable impurities and in which  $Y_2O_3$  particles are dispersed in the steel. In this method, by using a  $TiO_2$  powder as an element powder of a Ti component to be mixed at the mechanical alloying treatment or by additionally adding an  $Fe_2O_3$  powder, the bonding of Ti with C is suppressed so that the C concentration in the matrix does not decrease. As a result,  $\alpha$  to  $\gamma$  transformation during the heat treatment is ensured and it is possible to manufacture an oxide dispersion strengthened ferritic steel having a coarse and equiaxed grain structure effective in improving high-temperature creep strength.